

**Defense Information Infrastructure (DII)  
Common Operating Environment (COE)  
Statement of Functionality (SOF)  
for the  
METCAST Server (MCSRVR) Segment**

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# **1 SCOPE**

## **1.1 Identification**

This document describes the functionality of the METCAST Server (MCSRVR) Segment of the METCAST data distribution software developed by Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA.

## **1.2 System Overview**

METCAST is a standards-based, request-reply and subscription (channel) system for distributing meteorological and oceanographic (METOC) and other information over the Internet using Hyper-Text Transfer Protocol (HTTP) and Multipurpose Internet Mail Extensions (MIME). The METCAST Client provides a graphical user interface (GUI) for requesting METOC data and specifying the timing and frequency of retrievals, and for subscribing to “channels”, which are conduits for any type of information. The METCAST Server Segment is responsible for processing requests for data from METCAST Clients, interfacing with a database to attempt to satisfy each request, and formatting the retrieved data as specified in the request before returning the data to the client. The METCAST Client comprises a separate segment.

## **1.3 Document Overview**

Section 2 of this document describes the METCAST system in greater detail to afford some insights into the role filled by the MDMETC segment. Section 3 describes the functionality of the MCSRVR segment.

## 2 METCAST FUNCTIONALITY OVERVIEW

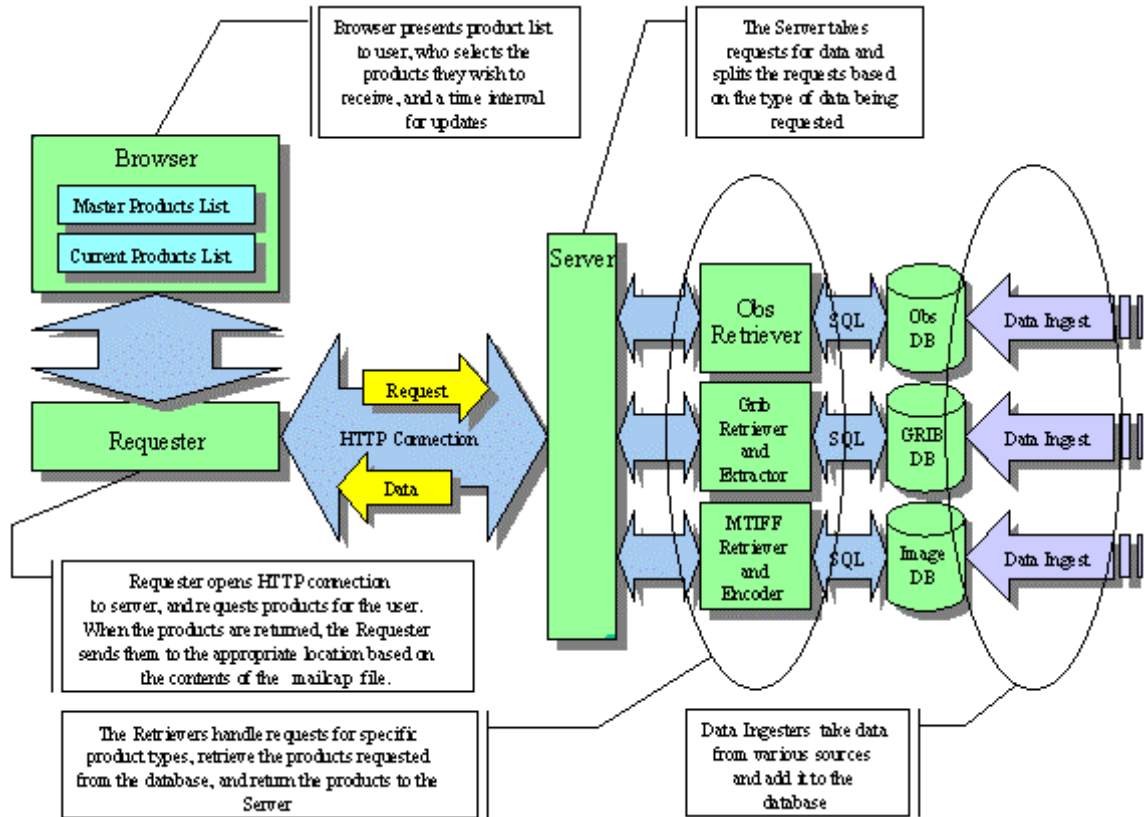
**METCAST** is a standards-based, request-reply and subscription system used to transmit data across the web using HTTP. METCAST uses a client-server architecture in which a server, connected to a METOC database, publishes a dynamic product list showing all data currently in the system and all channels available through the server. Clients subscribe to the product list automatically when their connection to a server is active, and thus continually maintain a list of data available on the system. A client may be connected to multiple servers, and will maintain a separate product list for each server.

The METCAST Client provides a graphical user interface (GUI) that allows users to:

- Define geographical areas of interest in Mercator or polar stereographic projections, or select from available satellite areas or special areas.
- Define a product suite for each area of interest defined. Products are selected from a Dynamic Product List that is constantly updated by each server, so that the user only sees those products that are actually available for download at the time of selection.
- For each server, specify the scheduling options for each type of data (grids, observations, imagery, and channels) requested. Products may be retrieved on demand, at scheduled times, or at specified intervals. The user may also specify the number of images to be held on the system and the maximum age of the products to be retrieved.
- Schedule areas of interest. The system will not retrieve any data for an area until it is scheduled (activated). Once scheduled, the area may be unscheduled at any time to deactivate retrievals.
- Monitor and interact with retrievals in progress. A Java-based Retriever Monitor shows the status of active and completed retrieval sessions, and allows the user to start a stopped or sleeping session, stop an active or sleeping session, or remove a session entirely. An Area Status function is also available to show in real time the products retrieved for an area.
- To view, in conjunction with Joint METOC Viewer (JMV), all downloaded data on a map background or, for upper air data, a Skew-T, Log P diagram.

When a request is scheduled, the METCAST Client formulates a request message and forwards it via Hyper-Text Transfer Protocol (HTTP) to the server(s) from which the data are requested. The server checks its database to find out whether it has any new data to fill the request. If not, it

returns a message to that effect. If there is new data, the server extracts the data from its database, packages it, and returns it to the client. Figure 2-1 shows the METCAST data flow.



**Figure 2-1. METCAST Data Flow**

### 3 MCSRV R SEGMENT FUNCTIONALITY

The METCAST Server segment is responsible for receiving and decoding user requests (including those for data delivered through channels), retrieving the requested data from the database, packaging it for transmission, and returning it to the requester via HTTP.

The MCSRV R segment includes executable programs and scripts that process incoming requests, query the appropriate databases to retrieve the requested information, format the information for transmission, and return the data to the requester. The MCSRV R segment is also responsible for maintaining an up-to-date Dynamic Product List, which shows all data contained in the databases resident with the server. The Dynamic Product List is transmitted via a channel to connected METCAST Client applications.

Data delivered to the requester are enclosed in Multipurpose Internet Mail Extensions (MIME) wrappers. Observation data are provided in an Weather Observation Markup Format (OMF), which is an extension of Extensible Markup Format (XML). Two-dimensional gridded field data are supplied in the World Meteorological Organization (WMO) Gridded Binary (GRIB) format. Three-dimensional gridded field data are supplied in an Empirical Orthogonal Functions (EOF) compacted format. Imagery data are provided in their native binary formats. Each format is assigned a particular MIME type, which allows METCAST Client and the associated helper applications to properly process it at the client end.